--8. The process according to claim 6, wherein the thickness of the amorphous layer of said membrane is < 2 μm.--

CONDITIONAL PETITION FOR EXTENSION OF TIME

If entry and consideration of the amendments above requires an extension of time, Applicant respectfully requests that this be considered a petition therefor. The Commissioner is authorized to charge any fee(s) due in this connection to Deposit Account No. 14-1263.

ADDITIONAL FEE

Please charge any insufficiency of fees, or credit any excess, to Deposit Account No. 14-1263.

REMARKS

Applicant respectfully requests reconsideration and allowance of this application in view of the amendments above and the following comments.

Claims 4-6 were rejected under 35 USC § 112, second paragraph, as being indefinite. In response, Applicant submits that the claims are definite, and, therefore, respectfully requests that the Examiner reconsider and withdraw this rejection. With respect to point A), Applicants point out that the "wherein" clause in claim 4 has been revised in an effort that, hopefully, will make

clear to the Examiner what is covered. Regarding the phrase "distribution of pore diameters," Applicants point out that this term refers to the statistical distribution function. This function describes the frequency of events, e.g., the frequency of pore sizes, against the physical unit, e.g., pore size. Often such a distribution function is similar to a Gaussian function. The "half-width" of this function is small, if all pore diameters are of about the same size, and would be zero, if all pore diameters were of the same exact size.

With respect to point B), claim 6 requires a particular thickness of the amorphous layer of the membrane; respectfully, such limitation is proper and clear as to what is claimed. If the Examiner maintains point B), Applicant respectfully requests that the Examiner indicate exactly what is the source of the uncertainty, and why the Examiner considers the limitation in claim 6 to be improper.

Claim 5 was objected to under 37 CFR § 1.75(c) as being of improper dependent form. In response, Applicant submits that there is no defect, and, therefore, respectfully requests that the Examine reconsider and withdraw this objection. Claim 5 recites a limitation of the *pore diameter,* whereas the "0.3" limitation of claim 4 refers to the *overall distribution* of pore diameters. The only limitation which claim 4 places on pore diameter is that they "are not larger than twice the diameter of the molecules of said starting materials." Accordingly, claim 5 is not, in fact, inconsistent with claim 4.

Claims 4-6 were rejected under 35 USC § 103(a) as being obvious over Maier, U.S. Patent No. 5,250,184. In response, Applicant submits that the present claims are not *prima facie* obvious over Maier. Therefore, Applicant believes that the Examiner would be fully justified to reconsider and withdraw this rejection.

The instant claims are distinguished from Maier in at least two respects:

1) The instant claims require that the starting materials are *pressed* through the membrane; and

2) The instant claims also require that the instant membrane contain pores having diameters not larger than twice the diameter of the molecules of the starting materials.

Maier does not teach or suggest these features of the present invention. Accordingly, Applicant submits that Maier does make out a *prima facie* case that the present invention would have been obvious to persons skilled in the art.

Maier's disclosure relates principally to liquid and gas separations, but there is reference therein to the use of the microporous membranes disclosed therein to conduct heterogeneously catalyzed reactions. Thus, in Maier's abstract, there is the following teaching:

> "If the membranes have been made catalytically active, the membranes can also be used for the selective and poison resistant conduction of heterogeneously catalyzed three phase reactions by having the reaction gas diffusing through the catalytically active membrane to react at the other side of the membrane with the liquid, consisting of molecules too large to penetrate the pores."

There is a similar teaching at column 3, lines 32-37.

Thus, Maier describes a process wherein *one* of the starting materials, i.e., the gas, *diffuses* through the membrane, and the *second* starting material, i.e., the liquid, does *not* pass through the membrane at all, since it expressly consists of "molecules too large to penetrate the pores."

In contrast, as noted above, the present claims requires that the starting materials are *pressed* through the membrane. There is no teaching or suggestion in Maier that wherein there are multiple starting materials, multiple starting materials pass through the membrane pores. Further, there is no teaching or suggestion in Maier that the starting materials are "pressed" through the membrane pores. Consequently, Maier cannot render the present claims *prima facie* obvious for this reason alone.

Further, as also noted above, the present claims also require that the pore diameter should not be greater than twice the molecular diameter of the starting materials. Although Maier teaches a method of controlling pore size, there is no teaching or suggestion therein that the pore

diameter should not be greater than twice the molecular diameter of the starting materials for membrane catalysis. However, this feature of the present invention, in conjunction with the pressing of the starting materials through the pores, has been discovered to be important for controlling selectivity. Specifically, as described in the instant specification in the last paragraph on page 2 and the first paragraph on page 4, Applicant has discovered that regulation of pore diameter and the act of pressing the starting materials through the pores cooperates to suppress undesirable consecutive and side reactions in various chemical reactions. Since consecutive and side reactions are the main cause of reduced yields and the production of chemical waste and side products in chemical production, this discovery is of great practical importance. Inasmuch as there is absolutely no teaching or suggestion in Maier that control of pore diameter and/or pressing the starting materials through the membrane pore is important for suppressing consecutive and side reactions, Applicant submits that Maier does not make out a *prima facie* case of obviousness, and, in any event, the present invention is characterized by unexpected results.

Further on this point, Applicant would call the attention of the Examiner to the instant examples. The instant examples unequivocally prove that the selectivity of the reaction can be controlled by pore size and pressing, which Applicant submits is completely unexpected in view of Maier. A summary of some of the pertinent results is shown in the following Table:

Table

EXAMPLE	CATALYST	PRESSED?	STARTING MATERIAL	BY-PRODUCTS
2	Membrane (1b)	Yes	2-Hexyne	0% n-Hexane or 1-Hexene
3	Membrane (1b)	Yes	2-Hexyne	0% n-Hexane or 1-Hexene
6	Powder (1d)	No, Stirred	2-Hexyne	**70% n-Hexane**
5	Membrane (1b)	Yes	1,3-Hexadiene	0% n-Hexane or 1-Hexene
7	Powder (1d)	No, Stirred	1,3-Hexadiene	**Prevailing Product is n-Hexane**

The data in the foregoing data clearly show that a significant improvement in selectivity is achieved compared with a powder catalyst by controlling the pore size of the membrane, and by pressing the starting materials through the pores. There is absolutely nothing in Maier that teaches or suggests that pore size and/or pressing the starting materials through the pores is important for improving selectivity. Accordingly, a person having ordinary skill in the art would not have been led by Maier to control pore size or the manner of passing the starting materials through the pores to improve selectivity. Therefore, the data in the specification, which, again, prove that selectivity can be improved by controlling pore size and/or pressing the starting materials through the pores, must be regarded as surprising and unexpected, and, thus, also as objective evidence of nonobviousness. Although these data are not in declaration form, consistent with the rule that all evidence of nonobviousness must be considered when assessing patentability, the Examiner must consider data in the specification in determining whether the

claimed invention provides unexpected results. *In re Soni,* 34 USPQ2d 1684, 1687 (Fed. Cir. 1995).

For completeness, Applicant notes the Examiner's reference to *In re Aller,* 105 USPQ 233, for the proposition that selecting reagents which meet functional limitations is an obvious expedient to perform the taught chemical reactions. However, Applicant points out that the holding of *Aller* has been held *not* to apply where, as here, the variables that are optimized, i.e., pore size and/or pressing the starting materials through the pores, were not known to be a result-effective variable. *See, e.g., In re Antonie,* 195 USPQ 6, 9 (CCPA 1977). Accordingly, *Aller* does not, in fact, support a *prima facie* case of obviousness on the present facts.

In view of the foregoing, Applicant submits that the Examiner would be fully justified to reconsider and withdraw this rejection. An early notice that this rejection has been reconsidered and withdrawn is, therefore, earnestly solicited.

Applicant believes that the foregoing constitutes a bona fide response to all outstanding objections and rejections.

Applicant also believes that this application is in condition for immediate allowance. However, should any issue(s) of a minor nature remain, the Examiner is respectfully requested to

telephone the undersigned at telephone number (914) 332-1700 so that the issue(s) might be promptly resolved.

Early and favorable action is earnestly solicited.

Respectfully submitted,

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By _____
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CERTIFICATE OF MAILING

I hereby certify that the foregoing Amendment under 37 CFR § 1.111 is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on the date indicated below:

Date: By _____
Kurt G. Briscoe